

### **REMARKS**

Reconsideration of the application is respectfully requested.

Claims 1, 5, and 6 have been amended to recite that the base oil (X) has “a kinematic velocity of 3.5 to 5 mm<sup>2</sup>/s, a total aromatic content of 0 to 2 mass%, and a sulfur content of not higher than 0.002 mass%.” Support for this amendment is found in the specification at, e.g., page 12, lines 9-11 and 22-23. Claims 1, 5, and 6 have also been amended to recite that the lubricant comprises a “0.05 to 0.3 mass%” sulfur-free detergent selected from alkali metal or alkaline earth metal salicylates, phenates without sulfur cross-linking, or carboxylates, a “0.01 to 0.1” mass% zinc dialkylphosphate as a sulfur-free phosphorus compound, and a “0.05 to 3.0 mass% friction modifier comprising C<sub>6</sub>-C<sub>30</sub> aliphatic amine, an oxygen-containing organic compound selected from the group consisting of alcohols, carboxylic acids, and esters other than glycol esters.” Support for these amendments is found in the specification at, e.g., page 21, lines 9-10, page 23, lines 11-14, page 25, lines 3-5, page 47, lines 4-5, page 50, lines 13-15, page 52, lines 22-26, and page 63, line 27. Claims 2 and 7 have been amended to more distinctly describe certain features of the invention. Support for these amendments is found in the specification at, e.g., page 14. New claims 10-12 have been added. Support for these claims is found in the specification at, e.g., page 14, line 21 to page 14, line 4. Claims 3 and 8 have been canceled without prejudice or disclaimer. No new matter has been added to the application. Upon entry of this amendment, claims 1-2, 4-7, and 10-12 are pending and at issue.

### **Anticipation Rejection**

Claims 1-8 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Japanese Publication No. 2004/347053 by Mabuchi et al. (“Mabuchi”).

Applicants respectfully submit that the Examiner has incorrectly applied 35 U.S.C. § 102(e). Foreign applications and publications may not be used as 35 U.S.C. § 102(e) prior art. MPEP § 2136.03. Accordingly, the rejection based on Mabuchi is believed to be moot.

### **Obviousness Rejection**

Claims 1-8 have been rejected under 35 U.S.C. § 103(a) as being obvious over Japanese publication No. 2000/297373 by Miyake et al. ("Miyake") in view of U.S. Publication No. 2002/0086803 by Berlowitz et al. ("Berlowitz").

Miyake discloses a lubricant applied on a pair of DLC contacting faces to reduce friction. However, the composition of the lubricant is not specifically disclosed in the reference.

Berlowitz discloses a lubricant composition for an internal combustion engine comprising an isoparaffinic hydrocarbon base stock such as a Fischer-Tropsch (FT) derived base stock which undergoes hydrocracking. Berlowitz further teaches that the FT derived base oil has a kinematic viscosity of 4.83 cSt at 100 °C, a total aromatic content of less than 0.1wt%, and a total sulfur content of less than 1 wppm. The reference also discloses that the composition may contain additives including alkali metal phenate detergents, antioxidants such as diphenyl amines, friction modifiers including glycol esters and ether amines, and anti-wear additives including metal phosphate.

As amended, claims 1, 5, and 6 require that the lubricant comprises a "0.05 to 0.3 mass%" of sulfur-free metal detergent (B) selected from alkali metal or alkaline metal salicylate, phenate, or carboxylate. Claims 1, 5, and 6 have also been amended so that the phenate does not contain sulfur cross-linking. The alkali metal phenate detergent disclosed in Berlowitz is generally cross-linked with sulfur and is thus not "sulfur-free."

Berlowitz is also silent regarding the addition of zinc dialkylphosphate as a sulfur-free phosphorus compound (C), which is an essential component in the amended claims. Accordingly, there is no disclosure or suggestion in Berlowitz for the sulfur-free metal detergent (B) called for in the pending claims.

Finally, the amended claims are commensurate with the data disclosed in the specification. As shown in the Examples at, e.g., pages 63-66 of the disclosure, the inventive compositions are associated with unexpected results. In particular, the compositions of the present invention exhibit a superior low friction coefficient.

For at least the reasons set forth above, the claims are not obvious over Miyake in view of Berlowitz. Withdrawal of the obviousness rejection based on these references is respectfully requested.

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Claims 1-4, and 6-8 are rejected under 35 U.S.C. 103(a) as obvious over U.S. Publication No. 2003/0162672 by Shirahama et al. ("Shirahama"). This ground for rejection is respectfully traversed.

Shirahama is cited for disclosing a low-friction sliding mechanism comprising a first and second sliding member and a lubricant applied to the sliding surfaces. The first sliding member is made of a diamond-like carbon material. According to the Examiner, Shirahama's lubricant composition is within the scope of the present invention because the sulfonates and ZnDTP reagents recited in Shirahama's lubricant are optional.

The lubricant compositions called for in the pending claims are free of reagents such as ZnDTP and sulfur-containing metal detergents which are disclosed in Shirahama's compositions. In

addition, Shirahama is silent regarding the superior and unexpected results achieved with compositions prepared with reduced sulfur content. When the inventive compositions are applied on DLC contact surfaces, superior reduction of initial friction and friction over time is observed. *See* specification at, e.g., pages 63-66. In contrast, Shirahama's compositions, which contain sulfonates or ZnDTP and are exemplified in Comparative Examples 1-2, 2-1, and 3-1 of the specification, exhibit inferior properties. Shirahama provides no teaching or suggestion that would have motivated one of ordinary skill in the art to reduce sulfur content.

In view of the foregoing, the pending claims are not obvious over Shirahama. Withdrawal of the rejection is respectfully requested.

**CONCLUSION**

In view of the above amendments and remarks, it is respectfully requested that the application be reconsidered, and that the pending claims be allowed and the case passed to issue

If there are any other issues remaining that the Examiner believes can be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Dated: October 22, 2009

Respectfully submitted,

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